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Yoshida et al.

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(54) **MEMORY CARD CONNECTOR**

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H01R 12/71	(2011.01)
H01R 25/00	(2006.01)
G06K 7/00	(2006.01)

(52) **U.S. Cl.**

CPC ***H01R 12/714*** (2013.01); ***H01R 25/006*** (2013.01); *G06K 7/0021* (2013.01)

(58) **Field of Classification Search**

USPC 439/629, 630, 631, 946, 541.5, 152, 439/159; 361/752, 796

See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

7,871,298	B2 *	1/2011	Guo et al.	439/630
8,469,747	B2 *	6/2013	Huang	439/629
2010/0105247	A1 *	4/2010	Guo et al.	439/630
2010/0144179	A1	6/2010	Guo et al.	
2011/0003496	A1 *	1/2011	Hu	439/159

FOREIGN PATENT DOCUMENTS

JP	2001357917	12/2001
JP	2003-323943	11/2003
JP	2005173943	6/2005

* cited by examiner

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(57) **ABSTRACT**

A memory card connector includes first and second connectors including first and second housings having first and second storage sections, respectively, and first and second contacts which connect with terminals of first and second memory cards removably-inserted into the first and second storage sections, respectively. The first and second connectors are superposed on each other in a direction of thickness thereof. Each first contact includes a first tail which is mountable to a circuit board and positioned on an outer peripheral side of a first side surface of the first housing. The second housing includes a second side surface located at a different position from the first side surface as viewed in the thickness direction. Each second contact includes a second tail which is mountable to the circuit board and positioned on an outer peripheral side of the second side surface.

6 Claims, 7 Drawing Sheets

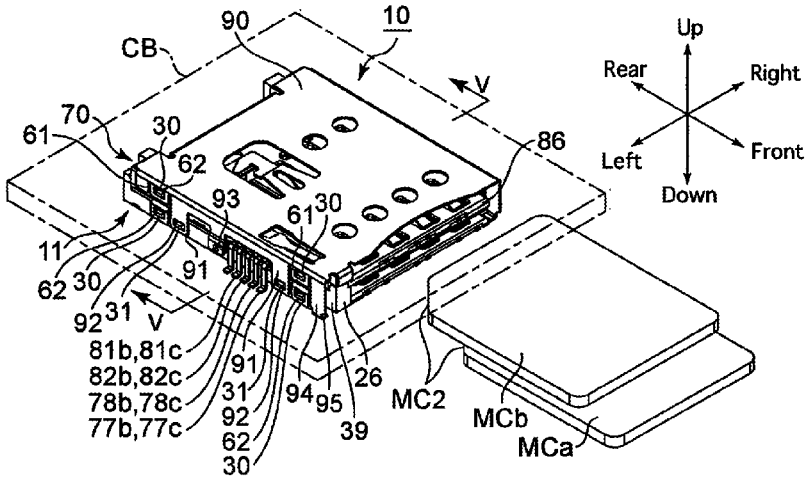
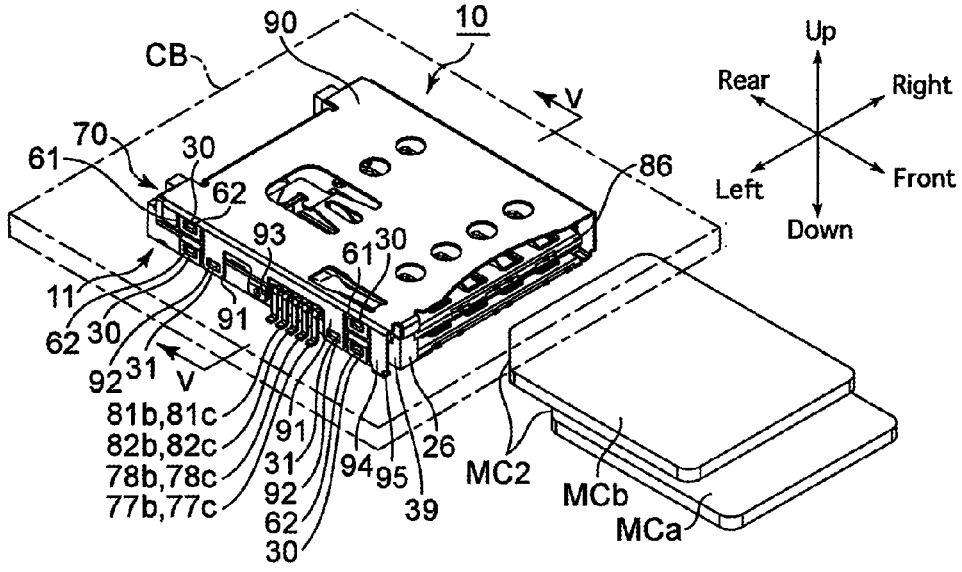


Fig. 1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Rear
Right
Left
Front
Down
70
61
30
62
86
93
61
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11
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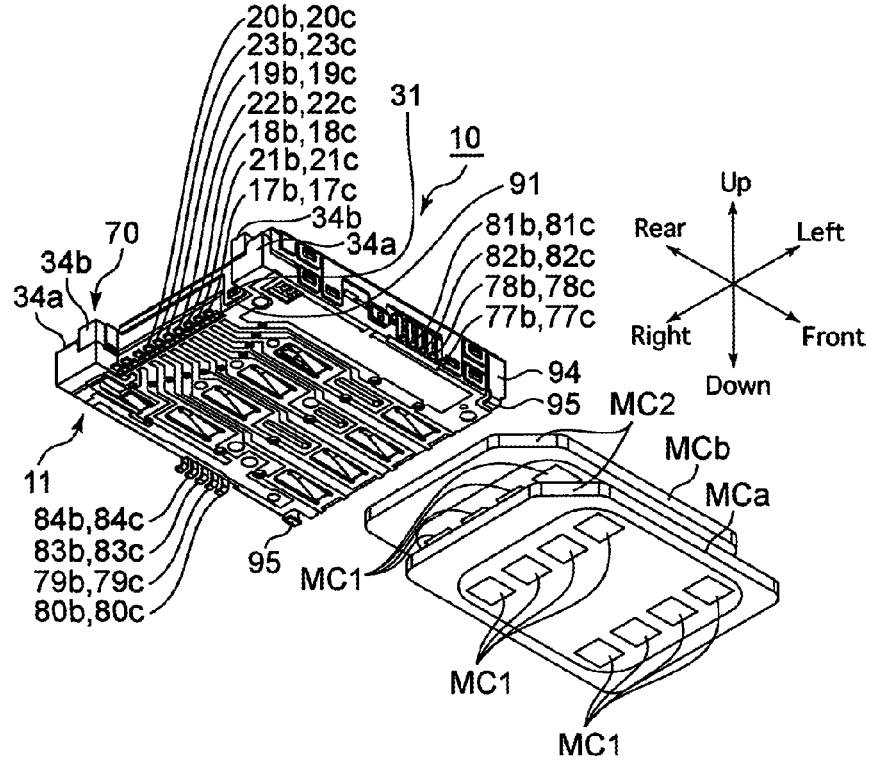
30
91
92
31
V
81b,81c
82b,82c
78b,78c
77b,77c
91
31
92
62
30
94
95
39
26
MC2
MCb
MCa

Fig. 2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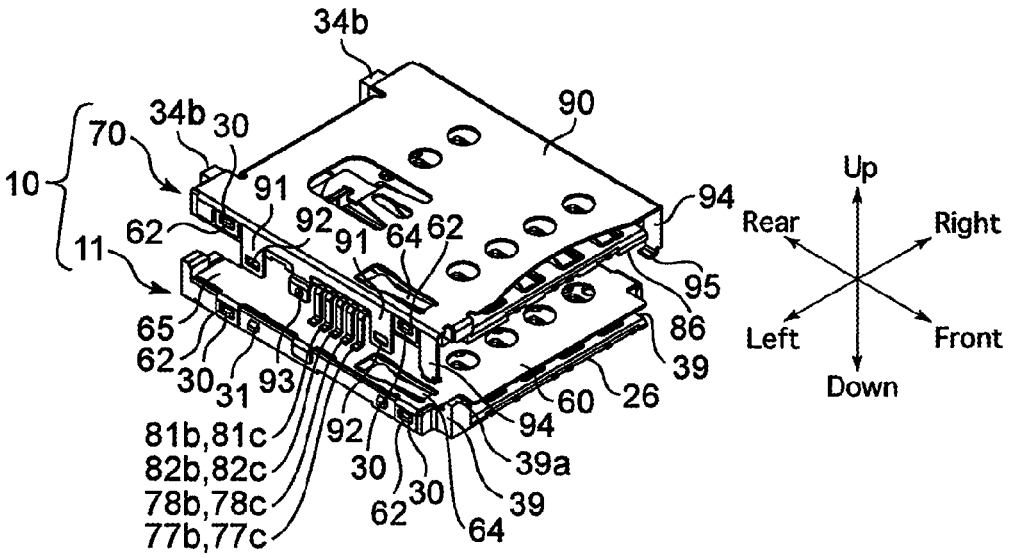
21b,21c
17b,17c
34b
34a
31
10
91
81b,81c
82b,82c
78b,78c
77b,77c
70
34b
34a
Up
Rear
Left
Right
Front
Down
94
95
MC2
MCb
MCa
11
84b,84c
83b,83c
79b,79c
80b,80c
95
MC1
MC1
MC1

Fig. 3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34b
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62
11
95
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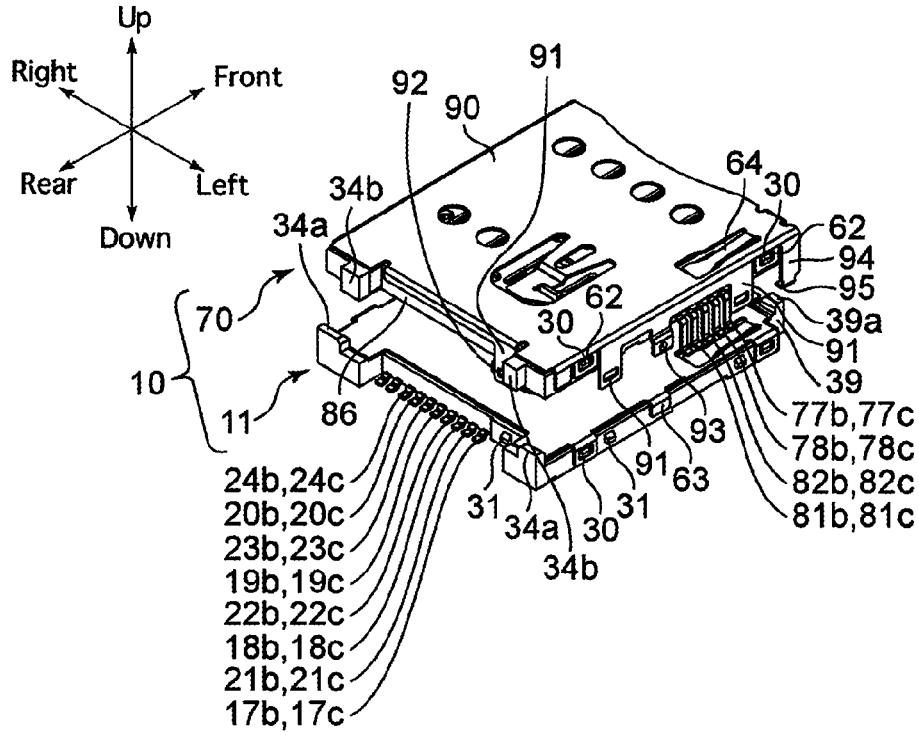
39
60
26
94
81b,81c
82b,82c
78b,78c
77b,77c
92
30
62
30
64
39a
39
Up
Rear
Right
Left
Front
Down

Fig. 4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Right
Front
Rear
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Down
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92
90
64
30
34b
34a
62
94
95
39a
91
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70
62
30
10
11
86
93
91
63
77b,77c
78b,78c
82b,82c
81b,81c
24b,24c
20b,20c
23b,23c
19b,19c
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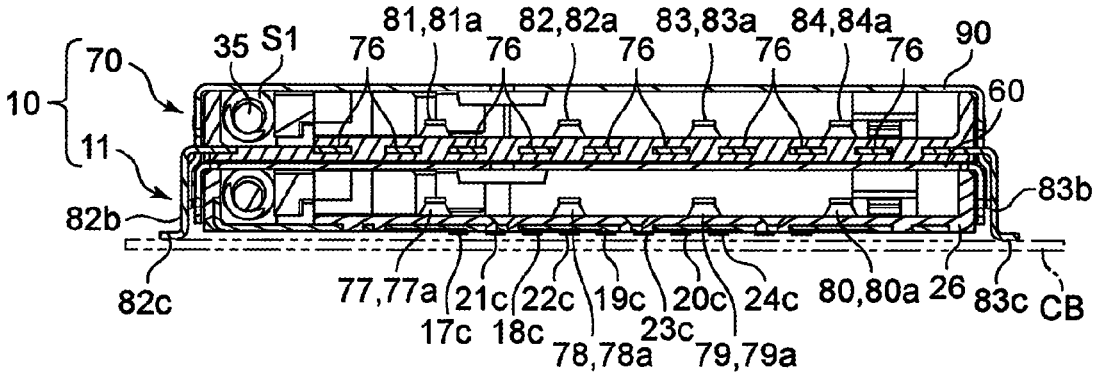
18b,18c
21b,21c
17b,17c
31
34a
30
31
34b

Fig. 5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70
11
35
S1
76
81,81a
82,82a
83,83a
84,84a
90
60
83b
82b
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77,77a
17c
21c
18c
22c
78,78a
19c
23c
20c
79,79a
24c
80,80a
26
83c
CB

Fig. 6

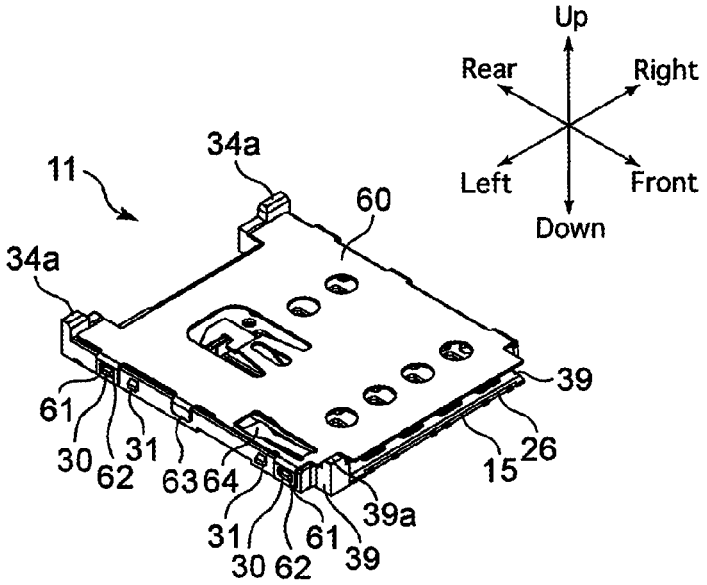
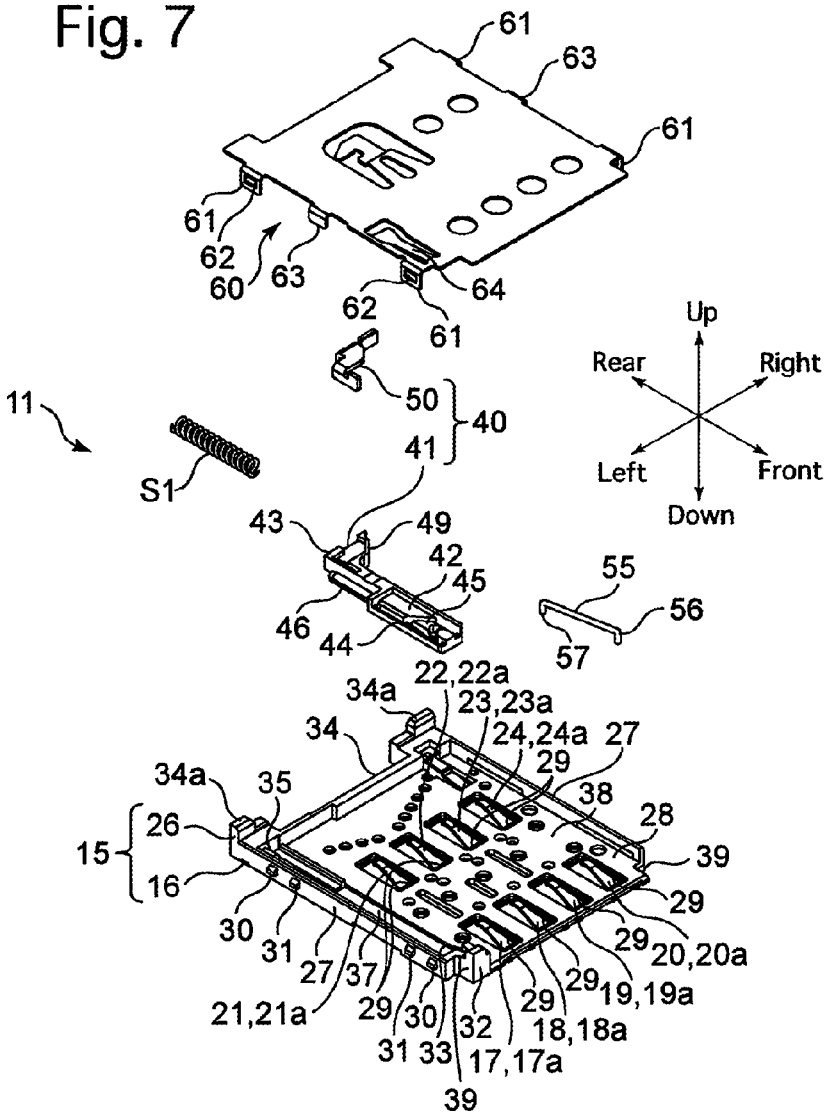

Up
Rear
Right
Left
Front
Down
11
34a
60
34a
39
61
30
62
31
63
64
15
26
39a
31
30
62
61
39

Fig. 7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63
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62
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62
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50
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41
11
S1
43
49
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45
46
44
55
56
57
Up
Rear
Right
Left
Front
Down
22,22a
34a
23,23a
34
24,24a
27
29
34a
35
38
28
26
15
16
39
29
30
31
27
37
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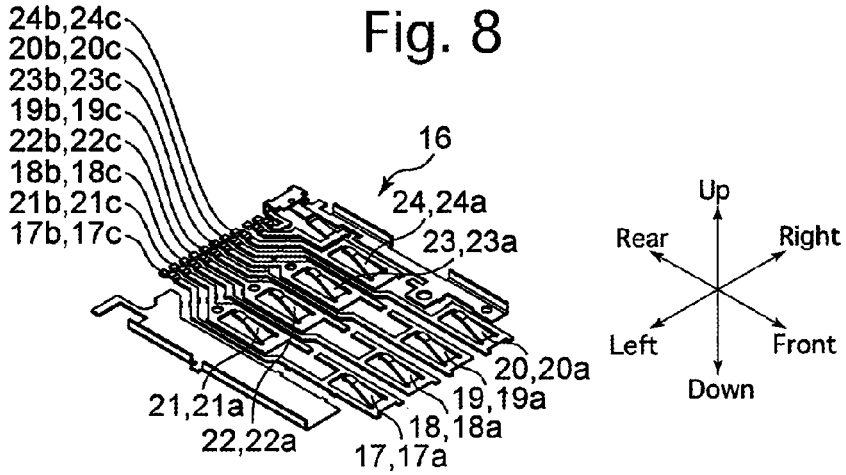
18,18a
31
33
17,17a
39

Fig. 8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19b,19c
22b,22c
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17b,17c
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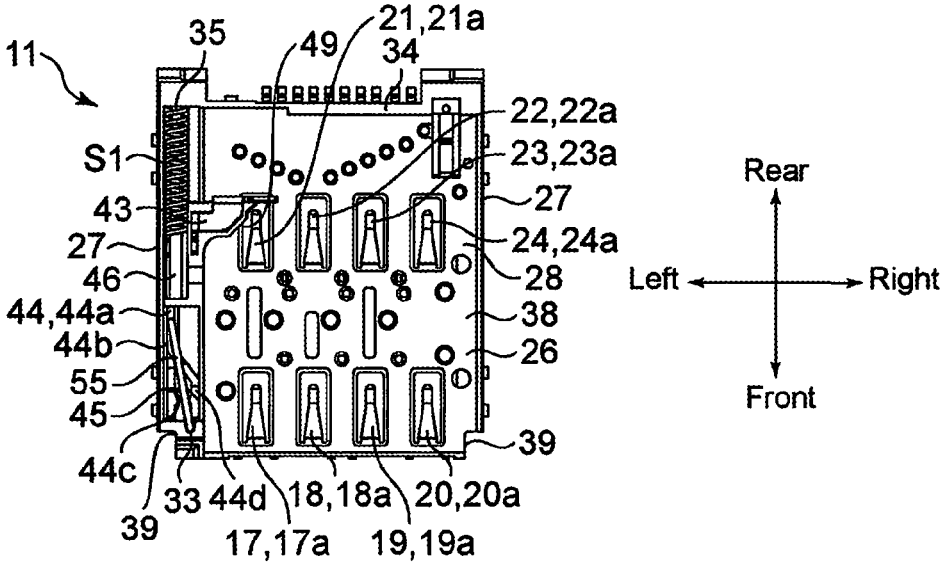
24,24a
23,23a
20,20a
19,19a
21,21a
18,18a
22,22a
17,17a
Up
Rear
Right
Left
Front
Down

Fig. 9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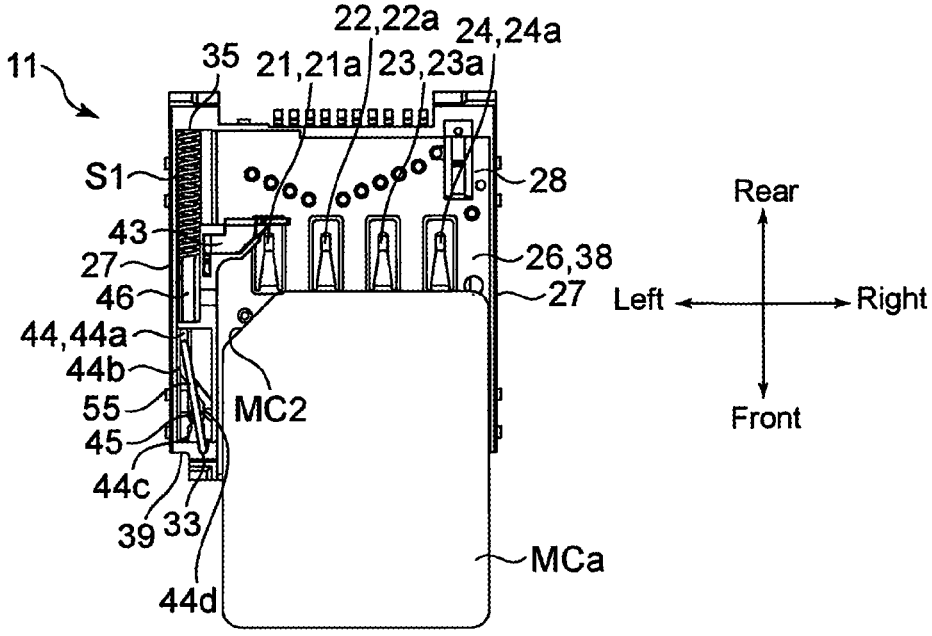
44,44a
44b
55
45
44c
39
33
44d
18,18a
20,20a
17,17a
19,19a
Rear
Left
Right
Front

Fig. 10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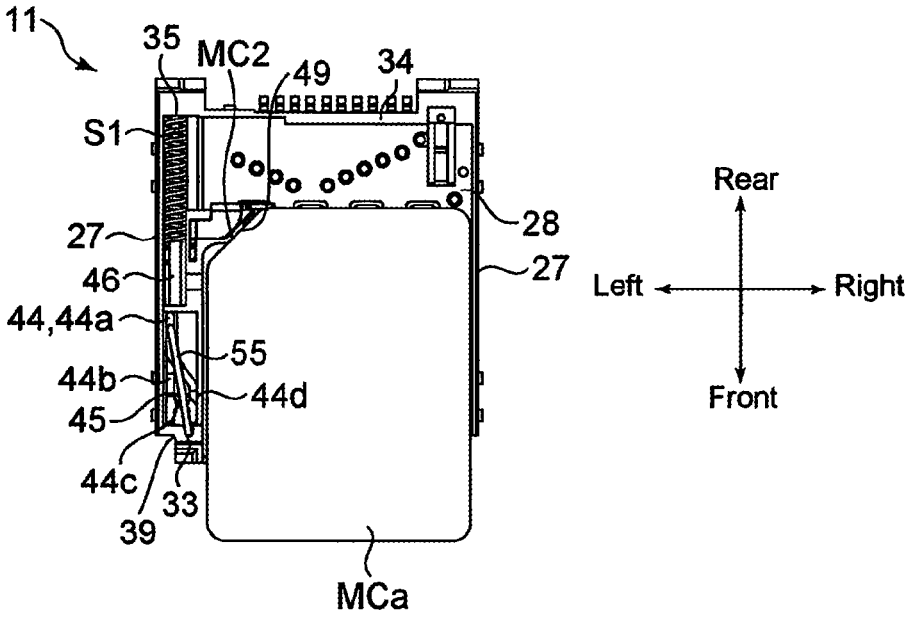
22,22a
24,24a
23,23a
28
S1
43
27
46
44,44a
44b
55
45
44c
39
33
44d
MC2
26,38
27
MCa
Rear
Left
Right
Front

Fig. 11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MC2
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S1
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44,44a
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44c
39
33
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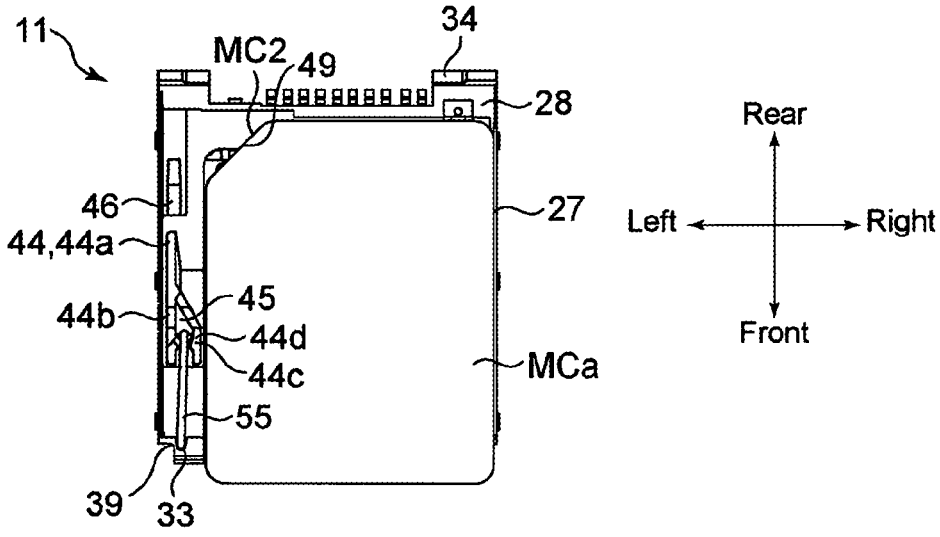
44d
28
27
MCa
Rear
Left
Right
Front

Fig. 12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MC2
49
34
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44c
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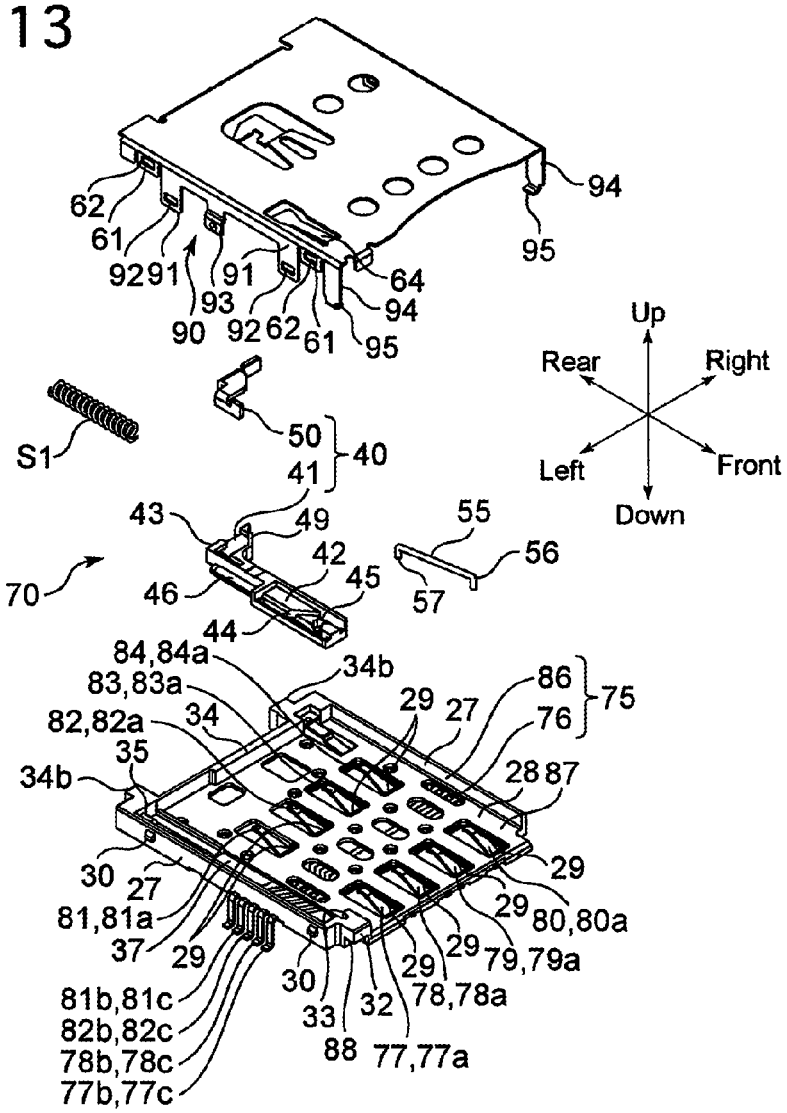
39
33
27
MCa
Rear
Left
Right
Front

Fig. 13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Up
Rear
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Left
Front
Down
S1
50
40
41
43
49
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84,84a
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34b
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79,79a
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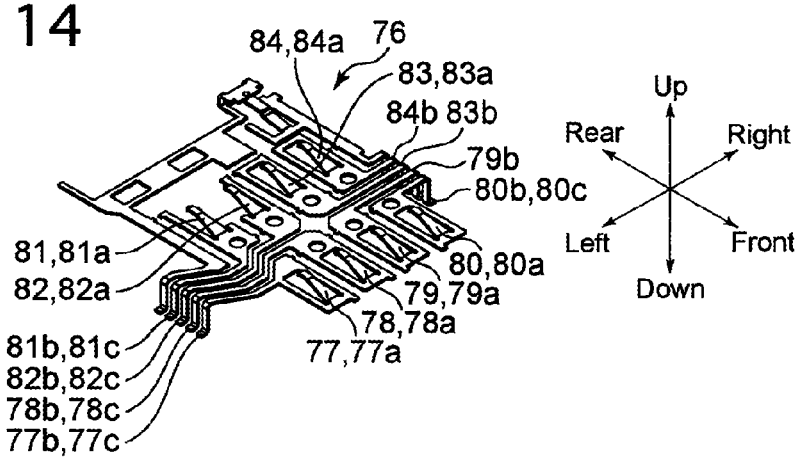
77b,77c

Fig. 14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83,83a
84b
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Up
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81,81a
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80,80a
79,79a
78,78a
77,77a
81b,81c
82b,82c
78b,78c
77b,77c

MEMORY CARD CONNECTOR

CROSS REFERENCE TO RELATED APPLICATION

The present invention is related to and claims priority of the following co-pending application, namely, Japanese Patent Application No. 2013-12820 filed on Jan. 28, 2013.

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to a connector into which memory cards, such as micro-SD cards, SIM-cards and micro-SIM cards, are removably insertable, and in particular, relates to a memory card connector into which two memory cards are removably insertable.

2. Description of Related Art

This type of memory card connector known in the art is disclosed in, e.g., Japanese Unexamined Patent Publication 2003-323943.

The memory card connector disclosed in the above-mentioned publication is constructed of a first connector and a second connector which are superposed on each other in the direction of thickness thereof.

The first connector has a first housing and a first group of contacts. The first housing is rectangular in overall shape and has a first storage slot (storage section) into which a first memory card is removably insertable, and the first group of contacts are electrically connected with terminals of the first memory cards inserted into the first storage slot. On the other hand, the second connector has a second housing and a second group of contacts. The second housing is identical in overall shape to the first housing and has a second storage slot (storage section) into which a second memory card is removably insertable, and the second group of contacts are electrically connected with terminals of the second memory cards inserted into the second storage slot.

Each contact of the first group of contacts of the first connector has a first tail which is mountable to a circuit board and positioned on the outer peripheral side of a first side surface serving as one side of the first housing, as viewed in the direction of thickness of the first and second connectors. In addition, the second housing has a first side surface (parallel to the aforementioned first side surface of the first housing) that is positioned on the same side as the first side surface of the first housing, and the second group of contacts of the second connector has a second tail which is mountable to the aforementioned circuit board and positioned on the outer peripheral side of the first side surface of the second housing as viewed in the aforementioned direction of thickness of the first and second connectors.

Some of the first tails of the first group of contacts of the first connector and some of the second tails of the second group of contacts of the second connector are alternately arranged (along the longitudinal direction of the first side surfaces of the first housing and the second housing).

The first connector and the second connector are mountable to a circuit board. More specifically, with a circuit board, the first connector and the second connector being superposed in that order, the first connector and the second connector can be mounted to the circuit board by soldering the first tails, which are formed at ends of the first group of contacts, and the second tails, which are formed at ends of the second tails of the second group of contacts, to the circuit board.

Since some of the first tails of the first group of contacts of the first connector and some of the second tails of the second group of contacts of the second connector are alternately arranged, the distance between any two adjacent first and second tails (i.e., the pitch of the alternately-arranged first and second tails) is extremely small. Therefore, the mountability of the first tails and the second tails to a circuit board easily deteriorates. In other words, positions (images) of the first and second tails are difficult to recognize by an image recognizer, and accordingly, defective soldering easily occurs between each of the first and second tails and the circuit board.

In addition, since the first tails (first contacts) of the first connector and the second tails (second contacts) of the second connector which are alternately arranged are mutually different in shape, it is difficult to make an alignment adjustment for the first tails and the second tails with respect to the circuit board (i.e., to make an adjustment to make the first tails and the second tails lie in a plane). In other words, a difference (difference in level) easily occurs between the distance (clearance) (in the direction of thickness of the circuit board) between the first tails and the circuit board and the distance (clearance) (in the direction of thickness of the circuit board) between the second tails and the circuit board. If such a difference occurs, the tails (the first tails or the second tails) of one of the first connector and the second connector come in contact with the circuit board, whereas the tails (the first tails or the second tails) of the other connector are inevitably spaced from the circuit board, so that there is a possibility of defective soldering occurring between the tails of the aforementioned other connector and the circuit board when the spaced distance (separated distance) therebetween is great.

Additionally, in the case where the memory card connector (a memory card) is small in size, if it is attempted to arrange the first tails and the second tails alternately, the distance between any two adjacent first and second tails (i.e., the pitch of the alternately-arranged first and second tails) would be extremely small, which makes it difficult to mount the first tails and the second tails onto the circuit board. Consequently, it is difficult to apply the technical idea disclosed in the aforementioned Japanese Unexamined Patent Publication 2003-323943 to a small-sized memory card connector.

Additionally, in order to alternately arrange some of the first tails of the first group of contacts of the first connector and some of the second tails of the second group of contacts of the second connector, it is sometimes the case that either the first tails or the second tails are each required to be formed into a complicated shape (e.g., a crank shape), which easily causes the production cost thereof to increase.

SUMMARY OF THE INVENTION

The present invention provides a memory card connector in which, although the memory card connector is structured such that the first connector and the second connector are superposed on each other, the mountability of the first tails of the first connector and the second tails of the second connector to a circuit board is favorable and the production cost can be kept low even when the memory card connector is small in size.

According to an aspect of the present invention, a memory card connector is provided, including a first connector including a first housing having one of a square and rectangular shape and provided with a first storage section, into which a first memory card is removably insertable, and first contacts which are electrically connected with terminals of the first memory card inserted into the first storage section; and a second connector including a second housing having one of a

square and rectangular shape and provided with a second storage section, into which a second memory card is removably insertable, and second contacts which are electrically connected with terminals of the second memory card inserted into the second storage section. The first connector and the second connector are superposed on each other in a direction of thickness thereof. Each the first contacts includes a first tail which is mountable to a circuit board and which is positioned on an outer peripheral side of a first side surface that serves as one side of the first housing as viewed in the thickness direction. The second housing includes a second side surface which is located at a different position from the first side surface as viewed in the thickness direction. Each second contact includes a second tail which is mountable to the circuit board and which is positioned on an outer peripheral side of the second side surface as viewed in the thickness direction.

It is desirable for the second side surface to be orthogonal to the first side surface as viewed in the thickness direction.

It is desirable for the circuit board, the first connector and the second connector to be superposed in that order, wherein the first storage section and the second storage section are provided with a first opening and a second opening which are formed in surfaces of the first housing and the second housing on a common side, respectively, the first memory card and the second memory card being removably insertable into the first storage section and the second storage section through the first opening and the second opening, respectively. The first housing is provided with the first side surface at a different position from the first opening as viewed in the thickness direction. A pair of the second side surfaces, of the second housing, are located at different positions from the first and second openings and the first side surface as viewed in the thickness direction.

It is desirable for the memory card connector to include a locking apparatus which engages with both the first housing and the second housing to hold the first connector and the second connector in a mutually superposed state.

The memory card connector can be incorporated in an electronic device.

In the memory card connector according to the present invention, the first tail of each first contact of the first connector is positioned on the outer peripheral side of the first side surface, which serves as one side of the first housing, as viewed in the thickness direction of the memory card connector, while the second tail of each second contact of the second connector is positioned on the outer peripheral side of the second side surface, which is located at a different position from the first side surface, as viewed in the thickness direction of the memory card connector.

Accordingly, the pitch (distance) between the first tails and the pitch (distance) between the second tails can be made (relatively) wide. Therefore, positions (images) of the first tails and the second tails become easy to recognize by an image recognizer, so that defective soldering does not easily occur between each of the first and second tails and the circuit board.

Additionally, since the first tails and the second tails are mounted on the circuit board at different positions (not alternately arranged), the first tails and the second tails are not easily influenced by each other. This makes it relatively easy to make alignment adjustments for the first tails and the second tails with respect to the circuit board, thus reducing the possibility of defective soldering occurring between each of the first and second tails and the circuit board.

Additionally, since the first tails and the second tails are not alternately arranged, the pitch (distance) between the first tails and the pitch (distance) between the second tails do not become narrow even if the memory card connector is small in size.

Therefore, according to the present invention, the mountability of the first tails and the second tails to the circuit board is satisfactory even when the memory card connector is small in size.

As viewed in the direction of thickness of the memory card connector, the first tails of the first contacts and the second tails of the second contacts are located at different positions (the first tails and the second tails are not alternately arranged), and accordingly, one of each first tail and each second tail does not need to be formed into a complicated shape (e.g., a crank shape).

BRIEF DESCRIPTION OF THE DRAWINGS

The present invention will be discussed below in detail with reference to the accompanying drawings, in which:

FIG. **1** is a front perspective view of an embodiment of a connector (memory card connector), a circuit board, a first memory card and a second memory card, viewed obliquely from above;

FIG. **2** is a rear perspective view of the memory card connector, the first memory card and the second memory card, viewed obliquely from below;

FIG. **3** is an exploded front perspective view of the memory card connector, viewed obliquely from above;

FIG. **4** is an exploded rear perspective view of the memory card connector, viewed obliquely from above;

FIG. **5** is a cross sectional view taken along the line V-V shown in FIG. **1**;

FIG. **6** is a front perspective view of a first connector, viewed obliquely from above;

FIG. **7** is an exploded perspective view of the first connector, viewed obliquely from above;

FIG. **8** is a perspective view of a first metal member provided as an element of the first connector, viewed obliquely from above;

FIG. **9** is a plan view of the first connector with a first upper housing thereof removed;

FIG. **10** is a plan view of the first connector and the first memory card with the first upper housing removed, showing a state shortly after the commencement of insertion of the first memory card into the first connector;

FIG. **11** is a view similar to that of FIG. **10**, showing the first connector and the first memory when the first memory card comes into contact with a card contact portion of a slider body located at an initial position thereof;

FIG. **12** is a view similar to that of FIG. **10**, showing the first connector and the first memory card when a slider of the first connector has slid to a push-inserted position;

FIG. **13** is an exploded front perspective view of a second connector, viewed obliquely from above; and

FIG. **14** is a front perspective view of a second metal member provided as an element of the second connector, viewed obliquely from above.

DESCRIPTION OF THE EMBODIMENT

An embodiment of a memory card connector according to the present invention will be hereinafter discussed with reference to FIGS. **1** through **14**. In the following descriptions, forward and rearward directions, upward and downward directions, and leftward and rightward directions are determined with reference to the directions of the double-headed arrows shown in the drawings.

The present embodiment of the memory card connector **10** can be installed in, e.g., a mobile device (electronic device) such as a mobile phone or a tablet computer, etc., and a first memory card MCa and a second memory MCb card, each of which is configured as a micro-SIM card, can be removably inserted into the memory card connector **10**.

The memory card connector **10** is provided with a first connector **11** and a second connector **70**, which constitute major elements of the memory card connector **10**.

First, the detailed structure of the first connector **11** will be discussed hereinafter.

The first connector **11** is provided with a first lower housing (first housing) **15**, a slider **40**, a cam bar **55**, a first upper housing (first housing) **60** and a compression coil spring S1.

The first lower housing **15** is substantially rectangular in a plan view and formed as a integrally-formed product including a first metal member **16** and a first insulator **26**.

As shown in FIG. **8**, the first metal member **16** is provided with eight first contacts **17**, **18**, **19**, **20**, **21**, **22**, **23** and **24**, and the eight first contacts **17**, **18**, **19**, **20**, **21**, **22**, **23** and **24** are integrally provided with eight first contact leaves **17***a*, **18***a*, **19***a*, **20***a*, **21***a*, **22***a*, **23***a* and **24***a* and eight first tails **17***b*, **18***b*, **19***b*, **20***b*, **21***b*, **22***b*, **23***b* and **24***b*, respectively. The rear ends of the eight first tails **17***b*, **18***b*, **19***b*, **20***b*, **21***b*, **22***b*, **23***b* and **24***b* constitute eight first mounting portions **17***c*, **18***c*, **19***c*, **20***c*, **21***c*, **22***c*, **23***c* and **24***c* that are located one step down from portions of the eight first tails **17***b*, **18***b*, **19***b*, **20***b*, **21***b*, **22***b*, **23***b* and **24***b* immediately in front of the first mounting portions **17***c*, **18***c*, **19***c*, **20***c*, **21***c*, **22***c*, **23***c* and **24***c*, respectively.

The first insulator **26** is integrated with the first metal member **16** by performing outsert molding on the first metal member **16** in an injection molding die not shown in the drawings. The bottom of the first metal member **16** (except the first tails **17***b* through **24***b*) and the bottom of the first insulator **26** lie in a plane (see FIGS. **2** and **5**). The first insulator **26** is provided with left and right side walls **27**, a bottom-forming portion **28**, a cam-bar support portion **32** and a rear wall **34**. The bottom-forming portion **28** forms the bottom of the first lower housing **15**. The first insulator **26** is further provided at both the left and right ends of the rear wall **34** with a pair of first positioning projections **34***a*, respectively, which project upward.

The bottom-forming portion **28** is provided with a total of eight contact exposing holes **29**, through which the first contact leaves **17***a* through **24***a* are exposed, respectively. The cam-bar support portion **32**, which constitutes the front end of the left side portion of the first lower housing **15**, is provided with a cam-bar support groove **33** which is recessed downward on a top surface thereof. The rear wall **34**, which constitutes the rear end of the first lower housing **15**, is provided with a spring support projection **35** which projects forward on the left side portion thereof. In addition, a left side portion of the bottom-forming portion **28** forms a slide groove **37** which is one step down from the periphery thereof. As shown in the drawings, the internal space of the first lower housing **15** is formed as a first storage slot (storage section) **38** which is surrounded by the left and right side walls **27**, the bottom-forming portion **28** and the rear wall **34**. Each of the left and right side walls **27** is provided on the outer side thereof with a front and rear pair of upper-cover lock projections **30**. Additionally, the first insulator **26** is provided on the left and right side walls **27** and the rear wall **34** with a total of five connector coupling projections **31**; more specifically, each of the left and right side walls **27** is provided on the outer side thereof with two (front and rear) connector coupling projections **31**, and the rear wall **34** is provided on the rear side thereof with one connector coupling projection **31**. The first insulator **26** is provided at each of the front left corner and the front right corner thereof with a clearance recess **39**. The first insulator **26** is further provided on the upper surface of the front left corner thereof with a front-side positioning projection **39***a* which projects upward.

As shown in the drawings, the first insulator **26** is substantially rectangular in shape in a plan view, the outer sides of the left and right side walls **27** are parallel to each other, and the rear surface of the rear wall **34** is orthogonal to the left and right side walls **27**. The first tails **17***b* through **24***b* (the first mounting portions **17***c* through **24***c*) of the eight first contacts **17** through **24** are positioned on the outer peripheral side of the rear surface (first side surface) of the rear wall **34** in a plan view (as viewed in the direction of thickness of the first connector **11**).

The slider **40** is an integrated combination of a slider body **41** and a reinforcing member **50**.

The slider body **41** is made of a heat-resistant synthetic resin, extends in the forward/rearward direction, and is provided with a linear portion **42** and a contact terminal **43**. The lower end of the linear portion **42** is slidably engaged in the slide groove **37**, and the contact terminal **43** projects rightward from the rear end of the linear portion **42**.

The slider **40** is provided on the front of the upper surface of the linear portion **42** with a heart-shaped cam groove having a substantially heart shape in a plan view. The heart-shaped cam groove **44** is formed around a heart-shaped protrusion **45**. The heart-shaped cam groove **44** is provided therein with a plurality of stepped portions. Specifically, the heart-shaped cam groove **44** is provided with an initial engagement section **44***a*, a push-insertion passage section **44***b*, a holding section **44***c* and a return passage section **44***d*. The initial engagement section **44***a* forms the rear of the heart-shaped cam groove **44** and extends linearly in the forward/rearward direction. The push-insertion passage section **44***b* is positioned on the left-hand side of the heart-shaped protrusion **45**, the holding section **44***c* is positioned in front of the heart-shaped protrusion **45**, and the return passage section **44***d* is positioned on the right-hand side of the heart-shaped protrusion **45**.

The slider body **41** is provided on a left half of the rear thereof with a spring support shaft **46** having a cylindrical-columnar shape which extends rearward. The slider body **41** is provided at the right end of the contact terminal **43** with a card contact portion **49** that constitutes a flat surface which is inclined to the forward/rearward direction in a plan view.

The reinforcing member **50** is made of metal and fixedly mounted to the rear of the slider body **41**.

The slider **40** is slidable on the first lower housing **15** in the forward/rearward direction along the slide groove **37** between the initial position shown in FIGS. **9**, **10** and **11** and the pushed-in position shown in FIG. **12**. In addition, the compression coil spring S1 is installed in a compressed state (resiliently deformed state) (in which the compression coil spring S1 becomes smaller in length than that in a free state) between the rear end of the slider **40** and the left side portion of the rear wall **34**. The spring support shaft **46** is inserted into the front of the compression coil spring S1, and the rear end of the compression coil spring S1 is engaged with the spring support projection **35**. Accordingly, a forward spring force is continuously exerted on the slider **40** from the compressing coil spring S1, so that the slider **40** is in the initial position thereof when no external force other than the spring force of the compression coil spring S1 is exerted on the slider **40**.

The cam bar **55** is made of metal and links the first lower housing **15** and the slider body **41** with each other. The cam

bar **55** is provided at the front and rear ends thereof with a front-end engaging projection **56** and a rear-end engaging projection **57**, respectively, each of which is bent downward. The front-end engaging projection **56** is rotatably engaged with the cam-bar support groove **33** of the first lower housing **15** (the cam-bar support portion **32**), and the rear-end engaging projection **57** is engaged with the heart-shaped cam groove **44** of the slider body **41** to be movable relative to the heart-shaped cam groove **44**.

The top of the first lower housing **15** that accommodates the slider **40**, the cam bar **55** and the compression coil spring S**1** is covered by the first upper housing **60**.

The first upper housing **60** is a press-formed product made of a metal plate. The first upper housing **60** is provided on each of the left and right sides thereof with a front and rear pair of lugs **61**, and is provided, between the front and rear pair of lugs **61** on each of the left and right sides of the first upper housing **60**, with a first conduction lug **63**. The front and rear pair of lugs **61** and the first conduction lug **63** on each of the left and right sides of the first upper housing **60** are each formed to project downward. A locking hole **62** is formed in each lug **61**. The first upper housing **60** is mounted to the first lower housing **15** by engaging the locking hole **62** of each lug **61** of the first upper housing **60** with the corresponding upper-cover locking projection **30** of the first lower housing **15**. The first upper housing **60** is provided in the vicinity of the front left corner thereof with a cam-bar-biasing leaf spring **64** which is formed at the time of formation of the first upper housing **60** by press-forming. The cam-bar-biasing leaf spring **64** is a cantilever leaf spring which extends obliquely rearwardly downwards from the base end (front end) thereof. When in a free state, the cam-bar-biasing leaf spring **64** is positioned below the undersurface of the first upper housing **60**. Accordingly, since the cam-bar-biasing leaf spring **64** continuously biases the cam bar **55** toward the bottom side of the first lower housing **15** (downward), the engaged state of the front-end engaging projection **56** of the cam bar **55** with the cam-bar support groove **33** and the engaged state of the rear-end engaging projection **57** of the cam bar **55** with the heart-shaped cam groove **44** are maintained at all times.

The detailed structure of the second connector **70** will be discussed hereinafter.

The second connector **70** is provided with a second lower housing (second housing) **75**, a slider **40**, a cam bar **55**, a second upper housing (second housing) **90** and a compression coil spring S**1**. The second connector **70** is substantially identical in planar shape to the first connector **11**.

The second lower housing **75** is substantially rectangular in a plan view and formed as a integrally-formed product including a second metal member **76** and a second insulator **86**.

As shown in FIG. **14**, the second metal member **76** is provided with eight second contacts **77**, **78**, **79**, **80**, **81**, **82**, **83** and **84**, and the eight second contacts **77**, **78**, **79**, **80**, **81**, **82**, **83** and **84** are integrally provided with eight second contact leaves **77***a*, **78***a*, **79***a*, **80***a*, **81***a*, **82***a*, **83***a* and **84***a* and eight second tails **77***b*, **78***b*, **79***b*, **80***b*, **81***b*, **82***b*, **83***b* and **84***b*, respectively. As shown in the drawings, the second tails **77***b*, **78***b*, **81***b* and **82***b* extend leftward from the second metal member **76**, while the second tails **79***b*, **80***b*, **83***b* and **84***b* extend rightward from the second metal member **76**. The ends (lower ends) of the eight second tails **77***b*, **78***b*, **79***b*, **80***b*, **81***b*, **82***b*, **83***b* and **84***b* constitute eight second mounting portions **77***c*, **78***c*, **79***c*, **80***c*, **81***c*, **82***c*, **83***c* and **84***c* that are located one step down from the portions adjacent to the eight second tails **77***b*, **78***b*, **79***b*, **80***b*, **81***b*, **82***b*, **83***b* and **84***b*, respectively.

The second insulator **86** is integrated with the second metal member **76** by performing outsert molding on the second metal member **76** in a mold not shown in the drawings. The second insulator **86** is provided with left and right side walls **27**, a bottom-forming portion **28**, contact exposing holes **29**, upper-cover lock projections **30**, a cam-bar support portion **32**, a cam-bar support groove **33**, a rear wall **34**, a spring support projection **35**, a slide groove **37**, and a second storage slot (storage section) **87** which corresponds to the first storage slot **38**. The second insulator **86** is further provided in the vicinity of the left and right ends of the rear wall **34** with a pair of second positioning projections **34***b*, respectively, which project rearward. The second insulator **86** is further provided at the front left corner of the lower surface thereof with a front-side positioning recess **88**.

As shown in the drawings, the second insulator **86** is substantially rectangular in shape in a plan view, the outer sides of the left and right side walls **27** are parallel to each other, and the rear surface of the rear wall **34** is orthogonal to the left and right side walls **27**. The second tails **77***b*, **78***b*, **81***b* and **82***b* (the four second mounting portions **77***c*, **78***c*, **81***c* and **82***c*) of the four second contacts **77**, **78**, **81** and **82** are positioned on the outer peripheral side of the outer side surface (second side surface) of the left side wall **27** in a plan view (as viewed in the direction of thickness of the second connector **70**). On the other hand, the second tails **79***b*, **80***b*, **83***b* and **84***b* (the four second mounting portions **79***c*, **80***c*, **83***c* and **84***c*) of the remaining four second contacts **79**, **80**, **83** and **84** are positioned on the outer peripheral side of the outer side surface (second side surface) of the right side wall **27** in a plan view (as viewed in the direction of thickness of the second connector **70**).

The slider **40**, the cam bar **55** and the compression coil spring S**1** are mounted to the second lower housing **75** in a similar manner to the first lower housing **15**.

The top of the second lower housing **75** that accommodates the slider **40**, the cam bar **55** and the compression coil spring S**1** is covered by the second upper housing **90**.

The second upper housing **90** is a press-formed product made of a metal plate. The second upper housing **90** is provided on each of the left and right sides thereof with a front and rear pair of lugs **61**, a front and rear pair of connector coupling lugs **91** which are formed between the front and rear pair of lugs **61**, and a second conduction projection **93** which is formed between the front and rear pair of connector coupling lugs **91**. Furthermore, the second upper housing **90** is provided on its rear side with a connector coupling lug **91**. The front and rear pair of lugs **61**, the front and rear pair of connector coupling lugs **91** and the second conduction projection **93** on each of the left and right sides of the second upper housing **90** are each projected downward. A connector coupling hole **92** is formed in each connector coupling lug **91**. In addition, the second upper housing **90** is provided at the front ends of the left and right sides of the second upper housing **90** with left and right ground lugs **94**, respectively, which extend downward to a position below the lugs **61**, the connector coupling lugs **91** and the second conduction projection **93**, and a ground tail **95** which extends horizontally inwards is formed at the end (lower end) of each ground lug **94**. The second upper housing **90** is mounted to the second lower housing **75** by engaging the locking hole **62** of each lug **61** of the second upper housing **90** with the corresponding upper-cover locking projection **30** of the second lower housing **75**. When the second upper housing **90** is mounted to the second lower housing **75**, the second mounting portions **77***c* through **84***c* of the eight second contacts **77** through **84** and the ground tail **95** of each ground lug **94** substantially lie in a plane. When in a free state, the cam-bar-biasing leaf spring **64** of the second upper housing **90** is also positioned below the

undersurface of the second upper housing **90**. Accordingly, since the cam-bar-biasing leaf spring **64** of the second upper housing **90** continuously biases the cam bar **55** toward the bottom side of the second lower housing **75** (downward), the engaged state of the front-end engaging projection **56** of the cam bar **55** with the cam-bar support groove **33** and the engaged state of the rear-end engaging projection **57** of the cam bar **55** with the heart-shaped cam groove **44** are maintained at all times.

The first connector **11** and the second connector **70** that have been described above can be integrated by engaging the connector coupling hole **92** of each connector coupling lug **91** of the second upper housing **90** with the corresponding connector coupling lug **31** of the first lower housing **15** with the top of the first connector **11** being covered by the second connector **70**, with the outer sides of the left and right second positioning projections **34***b* being brought in contact with the inner sides of the left and right first positioning projections **34***a*, with the front-side positioning projection **39***a* being engaged in the front-side positioning recess **88**, and with the positions of the front side, the rear side and the left and right sides of the second connector **70** being made coincident with the positions of the front side, the rear side and the left and right sides of the first connector **11** (with the front side, the rear side and the left and right sides of the second connector **70** being made parallel with the front side, the rear side and the left and right sides of the first connector **11**), and the memory card connector **10** is completed by integrating the first connector **11** and the second connector **70** in such manner. When the first connector **11** and the second connector **70** are integrated, the bottom of the second insulator **86** of the second connector **70** comes in contact with the upper surface of the first upper housing **60**. However, as shown in FIG. **5**, since the second metal member **76** of the second connector **70**, except the eight second contacts **77** through **84** thereof, is positioned inside of the second insulator **86** (i.e., not exposed through the bottom surface of the second insulator **86**), there is no possibility of the second metal member **76** and the first upper housing **60** being short-circuited with each other.

In addition, the left and right second conduction projections **93** of the second connector **70** are engaged with (come in contact with) the left and right first conduction lugs **63** of the first connector **11** from the outside, respectively.

Additionally, the left and right ground lugs **94** are positioned inside the clearance recess **39**, and the second mounting portions **77***c* through **84***c* of the eight second contacts **77** through **84** of the second connector **70** and the ground tails **95** of the left and right ground lugs **94** of the second connector **70** substantially lie in a plane in which the first mounting portions **17***c* through **24***c* of the eight first contacts **17** through **24** lie.

The memory card connector **10** is mounted on a top surface (circuit formation surface) of a circuit board CB (shown by one-dot chain lines in FIGS. **1** and **5**). Specifically, the memory card connector **10** is temporarily lifted by vacuum holding the top surface of the second upper housing **90** by a vacuum machine (not shown) positioned above the memory card connector and subsequently by moving this vacuum machine upward. Subsequently, after the memory card connector **10** is moved by the vacuum machine to a position above a circuit pattern (not shown) formed on the top surface of the circuit board CB, the first mounting portions **17***c* through **24***c* of the eight first contacts **17** through **24** and the second mounting portions **77***c* through **84***c* of the eight second contacts **77** through **84** are mounted onto solder paste that has been applied onto the circuit pattern of the circuit board CB while the positions of the first mounting portions **17***c* through **24***c* and the second mounting portions **77***c* through **84***c* are visually checked by an image recognizer (not shown), and the ground tail **95** of each ground lug **94** is mounted onto solder paste that has been applied onto a ground pattern (not shown) of the circuit board CB to which. Subsequently, each application of solder paste is melted by heat in a reflow furnace. Thereupon, the first mounting portions **17***c* through **24***c* and the second mounting portions **77***c* through **84***c* are soldered to the circuit pattern while the left and right ground tails **95** are soldered to the ground pattern.

Operations of the memory card connector **10** that has the above described structure when the first memory card MCa and the second memory card MCb are inserted into and removed from the memory card connector **10** will be discussed hereinafter.

Each of the first memory card MCa and the second memory card MCb is provided on the bottom surface thereof with eight terminals MC**1**. In addition, each of the first memory card MCa and the second memory card MCb is provided at one of the four corners (specifically the rear left corner) thereof with a cut-off corner MC**2** which is formed along a straight line that extends substantially orthogonal to a diagonal line passing through this corner.

In a state where the first memory card MCa is not inserted into the first connector **11**, due to the biasing force of the compression coil spring S**1** the slider **40** is in the initial position while the rear-end engaging projection **57** of the car bar **55** is engaged with the initial engagement section **44***a* of the heart-shaped cam groove **44** (see FIGS. **9** through **11**).

In this state, inserting the first memory card MCa in a normal (correct) orientation (in which the terminals MC**1** face downward and the cut-off corner MC**2** becomes the rear left corner of the first memory card MCa) into the first storage slot **38** from a front opening (insertion slot) formed in the front thereof (see FIG. **10**) and further pushing the first memory card MCa rearward causes the cut-off corner MC**2** to come into contact with the card contact portion **49** of the slider body **41** (the contact terminal **43**), thus causing the first memory card MCa and the slider **40** to integrate with each other (see FIG. **11**).

From this state, pushing the first memory card MCa further rearward causes the slider **40** to slide rearward against the biasing force of the compression coil spring S**1** (while resiliently deforming the compression coil spring S**1** in a direction to compress the compression coil spring S**1**; the compression coil spring S**1** is omitted in FIG. **12**), thus causing the rear-end engaging projection **57** of the cam bar **55** that was engaged with a central portion of the initial engagement section **44***a* to move rearwardly to the front of the initial engagement section **44***a* and to the push-insertion passage section **44***b* (i.e., causing the rear-end engaging projection **57** of the cam bar **55** to be engaged with the front of the initial engagement section **44***a* and the push-insertion passage section **44***b* in that order). Subsequently, upon the rear-end engaging projection **57** of the cam bar **55** moving to the front end of the push-insertion passage section **44***b* (i.e., to a portion of the push-insertion passage section **44***b* which is positioned in front of the heart-shaped protrusion **45**), the slider **40** reaches the push-inserted position (see FIG. **12**).

When the rearward pressure force against the first memory card MCa is released after the slider **40** reaches the push-inserted position, the holding section **44***c* of the slider body **41** that is pressed (returned) forward by the biasing force of the compression coil spring S**1** is engaged with the rear-end engaging projection **57** of the cam bar **55**, so that the slider **40** is held in the push-inserted position (i.e., the slider **40** is prevented from sliding forward). Upon the slider **40** reaching

the push-inserted position, the eight terminals MC1 of the first memory card MCa come into contact with the associated eight first contacts **17** through **24** (the eight first contact leaves **17***a* through **24***a*), respectively, thus causing the first memory card MCa that is inserted into the first connector **11** and the circuit board CB to establish electrical continuity therebetween via the eight first contacts **17** through **24** (the first mounting portions **17***c* through **24***c*).

With the slider **40** held in the push-inserted position, the first memory card MCa is again pushed rearward against the biasing force of the compression coil spring S1, and the rearward pressure force against the first memory card MCa is released, thereupon the forward biasing force of the compression coil spring S1 causes the rear-end engaging projection **57** to move rearward away from the holding section **44***c*, thereafter move toward the return passage section **44***d* (to be engaged therewith) and automatically move to a central portion of the initial engagement section **44***a* via the return passage section **44***d*. Consequently, the slider **40** returns to the initial position (see FIG. **11**). Accordingly, the first memory card MCa can be manually pinched and pulled out forward from the memory card connector **10**.

The second memory card MCb can be inserted into and removed from the second connector **70** in the same manner as the first connector **11** because the second connector **70** has the same internal structure as the first connector **11** (i.e., because the slider **40**, the cam bar **55** and the compression coil spring S1 are installed to the second lower housing **75** in a similar manner to the first lower housing **15**).

Since the memory card connector **10** is provided with the first connector **11** and the second connector **70** that are superposed on each other in the vertical direction as described above, the first memory card MCa and the second memory card MCb can be inserted into the memory card connector **10** to be connected therewith. Accordingly, if the memory card connector **10** is incorporated in a mobile phone (mobile device) and if the first memory card MCa (that serves as a micro-SIM card) and the second memory card MCb (that serves as a micro-SIM card) are inserted into the memory card connector **10**, two different phone numbers can be selectively used on a single mobile phone.

The first tails **17***b* through **24***b* (the first mounting portions **17***c* through **24***c*) of the eight first contacts **17** through of the first connector **11** are positioned on the outer peripheral side of (positioned behind) the first side surface of the first lower housing **15** (the rear surface of the rear wall **34**), which serves as one side of the first lower housing **15**, as viewed in the direction of thickness of the first connector **11** (as viewed in the vertical direction), while the second tails **77***b* through **84***b* (the second mounting portions **77***c* through **84***c*) of the eight second contacts **77** through **84** of the second connector **70** are positioned on the outer peripheral sides (the left-hand side and the right-hand side of the left side wall **27**) of the second side surfaces (the outer surfaces of the left and right side walls **27**), of the second lower housing **75**, which are located at different positions (in different direction) from the aforementioned first side surface.

Accordingly, the pitch (distance) between the first tails **17***b* through **24***b* (the first mounting portions **17***c* through **24***c*) and the pitch (distance) between the second tails **77***b* through **84***b* (the second mounting portions **77***c* through **84***c*) can be made (relatively) wide. Therefore, images (positions) of the first tails **17***b* through **24***b* and the second tails **77***b* through **84***b* are easily recognized by an image recognizer, and the occurrence of short-circuiting between adjacent tails via soldering can be prevented, and accordingly, defective soldering and short-circuiting do not easily occur between each of the first and second tails and the circuit board CB.

Additionally, since the first tails **17***b* through **24***b* (the first mounting portions **17***c* through **24***c*) and the second tails **77***b* through **84***b* (the second mounting portions **77***c* through **84***c*) are mounted on the circuit board CB at different positions (are not alternately arranged), the first tails **17***b* through **24***b* and the second tails **77***b* through **84***b* are not influenced by each other. This makes it relatively easy to make alignment adjustments for the first tails **17***b* through **24***b* and the second tails **77***b* through **84***b* with respect to the circuit board CB, thus reducing the possibility of defective soldering occurring between each of the first and second tails and the circuit board CB.

Additionally, since the first tails **17***b* through **24***b* and the second tails **77***b* through **84***b* are not alternately arranged, the pitch (distance) between the first tails **17***b* through **24***b* (the first mounting portions **17***c* through **24***c*) and the pitch (distance) between the second tails **77***b* through **84***b* (the second mounting portions **77***c* through **84***c*) do not become narrow even if the memory card connector **10** is small in size.

Therefore, according to the present embodiment of the memory card connector, the mountability of the first mounting portions **17***c* through **24***c* of the first connector **11** and the second mounting portions **77***c* through **84***c* of the second connector to the circuit board CB is favorable even when the memory card connector **10** is small in size.

As viewed in the direction of thickness of the memory card connector **10**, the first tails **17***b* through **24***b* (the first mounting portions **17***c* through **24***c*) of the first contacts **17** through **24** and the second tails **77***b* through **84***b* (the second mounting portions **77***c* through **84***c*) of the second contacts **77** through **84** are located at different positions (the first tails **17***b* through **24***b* and the second tails **77***b* through **84***b* are not alternately arranged in either the forward/rearward direction or the leftward/rightward direction), therefore, it is not necessary for one of each first tail **17***b* through **24***b* and each second tail **77***b* through **84***b* to be formed into a complicated shape (e.g., a crank shape).

Additionally, the four second tails **77***b*, **78***b*, **81***b* and **82***b* on the left side of the second connector **70** and the four second tails **79***b*, **80***b*, **83***b* and **84***b* on the right side of the second connector **70** are positioned on the left and right sides of the first connector **11**, respectively (so that the second connector **70** holds the first connector **11**) and are soldered (and fixed) to the circuit pattern on the circuit board CB. Accordingly, since the second connector **70** (the four second tails **77***b*, **78***b*, **81***b* and **82***b* on the left side of the second connector **70** and the four second tails **79***b*, **80***b*, **83***b* and **84***b* on the right side of the second connector **70**) is mounted on the circuit board CB at two positions different from the position of the first connector **11** (the first mounting portions **17***c* through **24***c*), the mounting strength of the second connector **70** to the circuit board CB is great. Therefore, even if the first memory card MCa is forcibly inserted into and removed from the first connector **11** with an excessive force or even if the locking apparatus (which consists of the connector coupling projections **31** and the connector coupling holes **92** of the connector coupling lugs **91**) is omitted, the possibility of the first connector **11** being peeled off the circuit board CB is small (compared with the case where the first connector **11** is solely mounted on the circuit board CB).

Additionally, since the first tails **17***b* through **24***b* (the first mounting portions **17***c* through **24***c*) of the eight first contacts **17** through **24** and the second tails **77***b* through **84***b* (the second mounting portions **77***c* through **84***c*) of the eight second contacts **77** through **84** can be soldered to the circuit

pattern of the circuit board CB in a state where the first connector **11** and the second connector **70** are integrated via the locking apparatus (which consists of the connector coupling projections **31** and the connector coupling holes **92** of the connector coupling lugs **91**), the memory card connector **10** (the first connector **11** and the second connector **70**) can be mounted to the circuit board CB by a single soldering operation.

Additionally, since the first upper housing **60** and the second upper housing **90** are connected via the first conduction lug **63** and the second conduction projection **93** and also since the left and right ground lugs **94** (the ground tails **95** thereof) are electrically connected to a ground pattern (not shown) on the circuit board CB, electrical noise can be prevented from entering the first contacts **17** through **24** and the second contacts **77** through **84**, or noise caused at the first contacts **17** through **24** and the second contacts **77** through **84** can be prevented from leaking outside. Additionally, in the case where the worker/technician who inserts and removes the first memory card MCa and the second memory card MCb into and from the memory card connector **10** is charged with static electricity, this static electrical charge can be released to the ground pattern on the circuit board CB via the first upper housing **60** and the second upper housing **90**, and accordingly, the apparatus to which the connector **10** is installed, the first memory card MCa and the second memory card MCb can be prevented from being damaged by static electricity.

Although the present invention has been described based on the above illustrated embodiment of the memory card connector, the present invention is not limited solely to this particular embodiment; various modifications to the above illustrated embodiment of the memory card connector are possible.

For instance, the present invention can also be applied to a memory card connector into which memory cards (e.g., micro-SD cards, SIM cards, etc.) other than micro-SIM cards (the first memory card MCa and the second memory card MCb) are removably insertable.

Additionally, the memory card connector **10** can be mounted to an apparatus (electronic device) other than a mobile device (e.g., a personal computer, a digital camera, or a digital video camera, etc.).

Additionally, the first connector **11** (the first lower housing **15** and the first upper housing **60**) and the second connector **70** (the second lower housing **75** and the second upper housing **90**) can be square in a plan view, rather than rectangular in a plan view.

Additionally, in either case where the first connector (the first lower housing **15** and the first upper housing **60**) and the second connector **70** (the second lower housing **75** and the second upper housing **90**) are formed into a rectangular or square shape in a plan view, all the four corners of each connector can be exact right-angles, or non right-angles like the above described embodiment.

Additionally, the overall dimensions of the first connector **11** (the first lower housing **15** and the first upper housing **60**) and the second connector **70** (the second lower housing **75** and the second upper housing **90**) can be altered. For instance, the second connector **70** (the second lower housing **75** and the second upper housing **90**) can be reduced in size compared with the first connector **11** (the first lower housing **15** and the first upper housing **60**). However, in this case also, the four sides of the first connector **11** (the first lower housing **15** and the first upper housing **60**) and the four sides of the second connector **70** (the second lower housing **75** and the second upper housing **90**) can be made parallel with each other, respectively.

It is possible for the first tails (first mounting portions) of the first connector **11** to be arranged separately on the left and right sides of the first housing and that the second tails (second mounting portions) of the second connector **70** be arranged only behind the second housing.

It is possible for the second tails (second mounting portions) of the second connector **70** to be arranged only on the left or right side of the second housing with the first connector **11** remaining unchanged as in the above described embodiment. In addition, it is possible for the first tails (first mounting portions) of the first connector **11** to be arranged only on the left or right side of the first housing while the second tails (second mounting portions) of the second connector **70** be arranged only behind the second housing.

Additionally, it is possible that the slider **40**, the cam bar **55** and the compression coil spring S1 be omitted from at least one of the first connector **11** and the second connector **70**. In this case, it is possible that substitutions for the slider **40**, the cam bar **55** and the compression coil spring S1 be provided or not provided.

As an example of a substitution for the slider **40**, the cam bar **55** and the compression coil spring S1, it is possible to provide, e.g., a tray which is installed in either housing to be freely slidable. A memory card can be mounted on the tray when the tray is drawn out from the inside of the housing, and the tray on which the memory card is mounted can be pushed back into the housing. Upon the tray on which the memory card is mounted being pushed back into the housing, terminals of the memory card come into contact with contacts fixed to the housing through through-holes formed in the bottom of the tray.

Additionally, it is possible to form holes corresponding to the connector coupling holes **92** on the first connector **11** side and to form projections corresponding to the connector coupling projections **31** on the second connector **70** side.

Additionally, the housing of at least one of the first connector **11** and the second connector **70** can be formed as a single member.

Obvious changes may be made in the specific embodiment of the present invention described herein, such modifications being within the spirit and scope of the invention claimed. It is indicated that all matter contained herein is illustrative and does not limit the scope of the present invention.

What is claimed is:

1. A memory card connector comprising:

a first connector including a first housing having one of a square and rectangular shape and provided with a first storage section, into which a first memory card is removably insertable, and first contacts which are electrically connected with terminals of said first memory card inserted into said first storage section; and

a second connector including a second housing having one of a square and rectangular shape and provided with a second storage section, into which a second memory card is removably insertable, and second contacts which are electrically connected with terminals of said second memory card inserted into said second storage section,

wherein said circuit board, said first connector and said second connector are superposed in that order in a direction of thickness thereof,

wherein said first storage section and said second storage section are provided with a first opening and a second opening which are formed in surfaces of said first housing and said second housing on a common side, respectively, said first memory card and said second memory card being removably insertable into said first storage

section and said second storage section through said first opening and said second opening, respectively,

wherein each said first contacts includes a first tail which is mountable to a circuit board and which is positioned on an outer peripheral side of a first side surface that serves as one side of said first housing as viewed in said thickness direction,

wherein said second housing includes a second side surface which is located at a different position from said first side surface as viewed in said thickness direction,

wherein each said second contacts includes a second tail which is mountable to said circuit board and which is positioned on an outer peripheral side of said second side surface as viewed in said thickness direction,

wherein said first housing is provided with said first side surface at a different position from said first opening as viewed in said thickness direction, and

wherein a pair of said second side surfaces, of said second housing, are located at different positions from said first and second openings and said first side surface as viewed in said thickness direction.

2. The memory card connector according to claim **1**, further comprising a locking apparatus which engages with both said first housing and said second housing to hold said first connector and said second connector in a mutually superposed state.

3. The memory card connector according to claim **2**, wherein said locking apparatus comprises a first pair of coupling lugs provided on one of said pair of second side surfaces and a second pair of coupling lugs provided on the other of said pair of second side surfaces,

wherein said first pair of coupling lugs is provided on either side of said group of said second contacts, and

wherein said second pair of coupling lugs is provided on either side of said remaining group of said second contacts.

4. The memory card connector according to claim **1**, wherein said memory card connector is incorporated in an electronic device.

5. The memory card connector according to claim **1**, wherein the second tails of a group of said second contacts are arranged to project outwardly from one of said pair of said second side surfaces, in a plan view, and

wherein the second tails of a remaining group of said second contacts, other than said group of said second contacts, are arranged to project outwardly from the other of said pair of said second side surfaces, in a plan view.

6. The memory card according to claim **1**, wherein said pair of said second side surfaces constitute a pair of side surfaces that are provided on either side of said first opening and said second opening, in a front elevational view of said first opening and said second opening.

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